

WJ-6A

TOWARD INTELLIGENT & EFFECTIVE PACKET RADIO DEVELOPEMENT
VIA AN RF APPROACH TO NATIONAL LINKING

Donald Simon
2327 Alva Avenue
El Cerrito, CA 94530

BACKGROUND

AS MOST AMATEUR RADIO PACKET OPERATORS KNOW , WE ALL SHARE A COMMON GOAL OF COMPLETING A NATIONAL RELIABLE AND EFFICIENT DATA COMMUNICATIONS NETWORK AS SOON AS POSSIBLE. WE UNDERSTAND THAT FOR THIS TO HAPPEN NATIONALLY AND INTERNATIONALLY THERE IS A CLEAR NECESSITY TO COORDINATE METHODS OF SOFTWARE AND HARDWARE (FREQUENCIES, BAUD RATES, SHIFTS, ETC). THE CHALLENGE HAS BEEN FOCUSED ON SOLVING THE PROBLEMS OF AFFORDABLE SOFTWARE TECHNIQUES AND AFFORDABLE HIGH-SPEED RADIO EQUIPMENT INTERFACES. NEEDLESS-TO-SAY THESE ARE WORTHY ITEMS OF CONCERN AND WE ARE CONFIDENT THAT FURTHER EFFORT ON IMPLEMENTING LEVEL 3 AX.25 DESIGN AND EFFORTS AT DEVELOPING AFFORDABLE HIGH BAUD RATE DATA TRANSFER RADIO FREQUENCY SYSTEMS UTILIZING UHF AND MICROWAVE TECHNOLOGIES WILL EVENTUALLY BEAR FRUIT IN PROVIDING THE AMATEUR RADIO COMMUNITY RELIABLE, REDUNDENT, EFFICIENT, AND VALUABLE CONTINENTAL ERROR FREE DATA COMMUNICATIONS. THIS LATTER STAGE IN AMATEUR RADIO PACKET DEVELOPEMENT CAN BE ESTIMATED TO BE TWO YEARS AWAY, ASSUMING ITS FORM WOULD TAKE PLACE AS UHF/MICROWAVE 56K BAUD BACKBONE LEVEL 3 SYSTEMS. THE PURPOSE OF THIS PAPER IS NOT TO DISCUSS SOFTWARE APPROACHES, MODEM DEVELOPEMENT, NOR MICROWAVE RADIO EQUIPMENT, BUT TO DISCUSS RF PATHS IN AN ATTEMPT TO BETTER COORDINATE AND PLAN FOR THIS EVENTUAL REALIZATION.

RF LINKING BROKEN DOWN INTO THREE PHASES

THE ESTABLISHMENT OF RF BACKBONE SYSTEMS THAT WILL BE CAPABLE OF TYING TOGETHER THE ENTIRE NORTH AMERICAN CONTINENT NEEDS INTELLIGENT PLANNING NOW. THE FOLLOWING SUGGESTIONS SEEM WORKABLE AND PRACTICAL. I AM NOT HOWEVER WILLING TO CLING ONTO ANY IDEA THAT CAN BE PROVED TO BE INEFFICIENT; HENCE THIS PAPER, TO HELP US ALL MORE CLEARLY FOCUS UPON THE NEEDED SOLUTIONS. RF LINKING CAN BE BROKEN DOWN INTO THREE PHASES. PHASE A CAN BE DEFINED AS LEVEL 2 LINKING AT 1200 BAUD 1000 HZ SHIFT , AND UTILIZING VHF FM RF SYSTEMS . THIS PHASE IS AUGMENTED BY OCCASIONAL SATELLITE AND HF GATEWAY SYSTEMS AS WELL AS LINKED HIGH ELEVATION

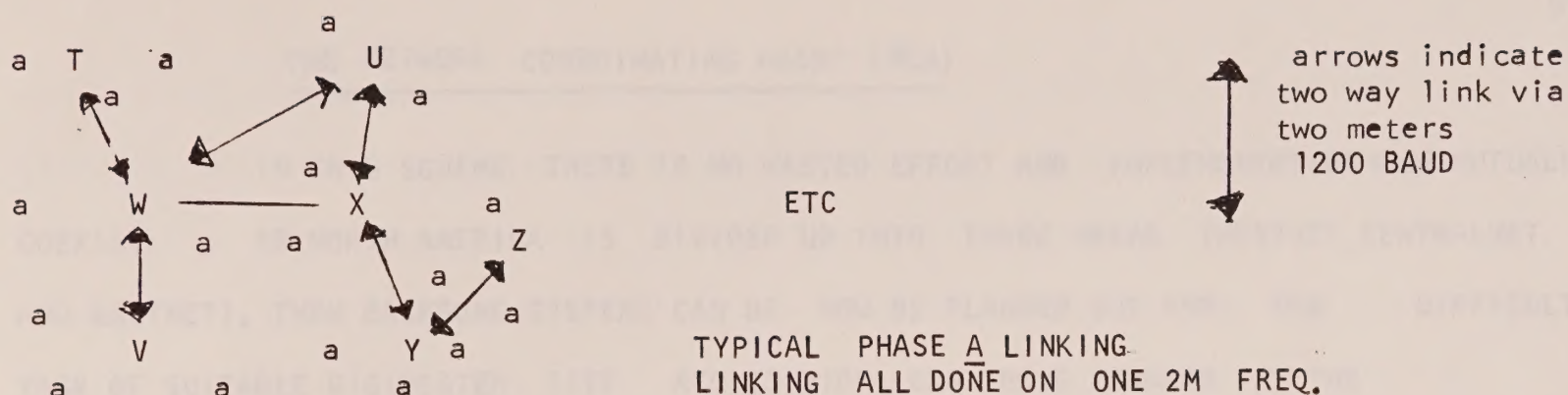
DIGIPEATERS. THIS PHASE IS WHERE WE ARE AT CURRENTLY WITHIN THE AMATEUR RADIO COMMUNITY. LONG DISTANCE PACKET COMMUNICATION IS POSSIBLE BUT RATHER UNRELIABLE, LIMITED, AND SOMETIMES SLOW AND TEDIOUS.

IT IS PHASE B THAT WE HOPE TO BEGIN IMPLEMENTING THIS SUMMER (1985). PHASE B CAN BE DEFINED AS UTILIZING EXISTING AND AFFORDABLE SOFTWARE AND EQUIPMENT ON 220 MHZ AT 9.6 K BITS/SECOND. I AM REFERRING HERE TO THE USE OF DUAL PORT DIGIPEATERS AND HIGH SPEED DATA METHODS MOST RECENTLY DEVELOPED BY BLOOM, GOODE, GOLDSTEIN AND OTHERS.^{1,2,3} IF WE WISH TO COMMUNICATE EFFICIENTLY WITHIN THE NEXT TWO YEARS BEFORE FULL FLEDGED LEVEL 3-56K BPS LINKING IS DEVELOPED WE MUST MOVE AHEAD WITHOUT WAITING TO THIS PHASE. TO IMPLEMENT RF PHASE B, ALL THAT WOULD BE NECESSARY IS AN ADDITION OF A 220 MHZ FM TRANSCEIVER, A 220 MHZ ANTENNA, AND A DUAL PORTED DIGIPEATER (SEE FOOTNOTES) TO THE EXISTING 2 METER DIGIPEATER SITES. THUS PHASE B CAN RIDE PIGGY BACK ON PHASE A, UTILIZING EXISTING SITES AND EQUIPMENT. INSTEAD OF UTILIZING A DUAL PORTED DIGIPEATER, OF WHICH MANY CAN BE INEXPENSIVELY MADE VIA THE XEROX 820 BOARD (SEE THE WORK OF BLOOM, GOODE, GOLDSTEIN, ET AL), ONE CAN EASILY CREATE THE SAME RESULTS BY AN ADDITIONAL TNC TO THE EXISTING ABOVE DIGIPEATER SYSTEM. THUS AREA WIDE TRUNK LINES CAN BE DEVELOPED LINKING LANS ON 220 MHZ AT 9.6K BAUD AT MINIMUM EXPENSE. THIS WOULD GREATLY ALLEVIATE THE MAJOR FAULT OF LEVEL TWO LINKING WHICH REQUIRES LINKING DIGIPEATERS BE ON THE SAME FREQUENCY IN ORDER TO COMMUNICATE. THUS DIGIPEATERS "W", "X", "Y", AND "Z" MUST BE ON THE SAME FREQUENCY FOR "W" TO TALK COMMUNICATE WITH "Z". THE PROBLEM ARISES THAT IF ALL THE ABOVE DIGIPEATERS ARE AT HIGH ELEVATION THEN DIGIPEATER "X" WILL HEAR "W" AND "Y" AND ALSO OVERHEAR LOWER LEVEL DIGIPEATERS IN THE "W" AND "Y" LANS. PACKETS THUS ORIGINATED THRU THE LOCAL AREA NET THRU DIGIPEATER "W" MAY WELL BE STALLED AT DIGIPEATER "X" BECAUSE THE FREQUENCY WILL ALWAYS APPEAR OCCUPIED BECAUSE "X" WILL HEAR ACTIVITY AND HOLD (DELAY) THE PACKET(S) DESTINED FOR "Z" UNTIL THE FREQUENCY IS CLEAR. THE ORIGINATING STATION WILL THUS WAIT FOR AN ACKNOWLEDGEMENT THAT THE FIRST PACKET WAS RECEIVED A CERTAIN DESIGNATED PERIOD OF TIME AND IF NONE IS RECEIVED, IT WILL RESEND THE ORIGINAL PACKET THEREBY

CAUSING EVEN ADDITIONAL LOADING TO AN ALREADY LOADED NETWORK AND/OR MAY EVEN COLLIDE WITH THE RECEIVING STATIONS ACK. THIS IS INDEED ONE OF THE COMMON PROBLEMS FACED TODAY IN PHASE A LEVEL TWO LANS. WITH PHASE B NEIGHBORING LANS COULD STAGGER THEIR TWO METER FREQUENCIES ("W" ON 145.01, "X" ON 145.03 , "Y" ON 145.05, "Z" BACK ON 145.01, etc) THUS ACCELERATING THROUGHPUT WITHIN THEIR LAN WHILE AT THE SAMETIME ALLOWING LONG DISTANCE LINKING TO BE ROUTED VIA THE 220 MHZ PORT TNC. AS LONG AS A LAN WAS LINKED VIA THIS 220MHZ LINKED SYSTEM, THEY COULD OPERATE ON ANY LOCAL FREQUENCY AND STILL NOT SUFFER FROM LACK OF LONG DISTANCE COMMUNICATIONS ABILITY. (SEE FIGURE B) . PHASE B CAN BE INEXPENSIVELY ADAPTED TO THE EXPANDING HIGH LEVEL DIGIPEATER SITES THAT ARE NOW DEVELOPING. THUS PHASE A AND PHASE B ARE MUTUALLY HELPFUL AS EXISTING, SITES, EQUIPMENT AND EFFORTS ARE MOST EFFICIENTLY UTILIZED.

PHASE C IS THE ESTABLISHMENT OF THE AFOREMENTIONED UHF/MICROWAVE WIDEBAND 56.K BIT/SECOND BACKBONE LINK THAT WILL BE NEEDED AS SOON AS WE CAN IMPLEMENT IT. THIS SHOULD PROVIDE US (UTILIZING SUITABLE SOFTWARE SYSTEMS) WITH THE ABILITY OF CONTINENTAL RELIABLE PACKET COMMUNICATIONS WITH ADEQUATE THROUGHPUT .IF WE ASSUME PHASE C TO BE OPERATIVE ON 1296 MHZ WE CAN FORSEE THAT THE 220 MHZ LINKS SHOULD STILL BE VALUABLE. ONE CAN PROJECT THAT THIS 56K BAUD 1296 TRUNK LINE COULD RIDE PIGGY BACK ON THE EXISTING PHASE B SYSTEMS. ONE THUS COULD CONCEIVE PHASE C DIGIPEATERS AS A "TRIPLE-PORTED - DIGIPEATER" (AT LEAST IN FUNCTION). EXISTING LANS COULD REMAIN AS THEY WERE UTILIZING THEIR EXISTING TECHNOLOGIES WITH NO ADDED COSTS AS LONG AS THEY COULD ACCESS PHASE C DIGIPEATERS VIA PHASE B (220 MHZ 9.6K BAUD) SYSTEMS. IT CAN BE DEMONSTRATED THAT ONLY KEY HIGH LEVEL DIGIPEATER SITES NEED FORM THE PHASE C (LEVEL 3, 56.K BAUD , 1296 MHZ) TRUNK LINE. THUS EACH INDIVIDUAL LAN WOULD BE SPARED THE ADDED HIGH COSTS OF IMPLEMENTING LEVEL 3. FOR COMPLETION ALL THAT WOULD BE NECESSARY PHASE B (220MHZ 9.6 K BAUD) COMMUNICATION WITHIN ONE OR TWO HOPS TO A LEVEL 3 PHASE C NODE (TRIPLE PORTED TNC DIGIPEATER).

FIG 1.

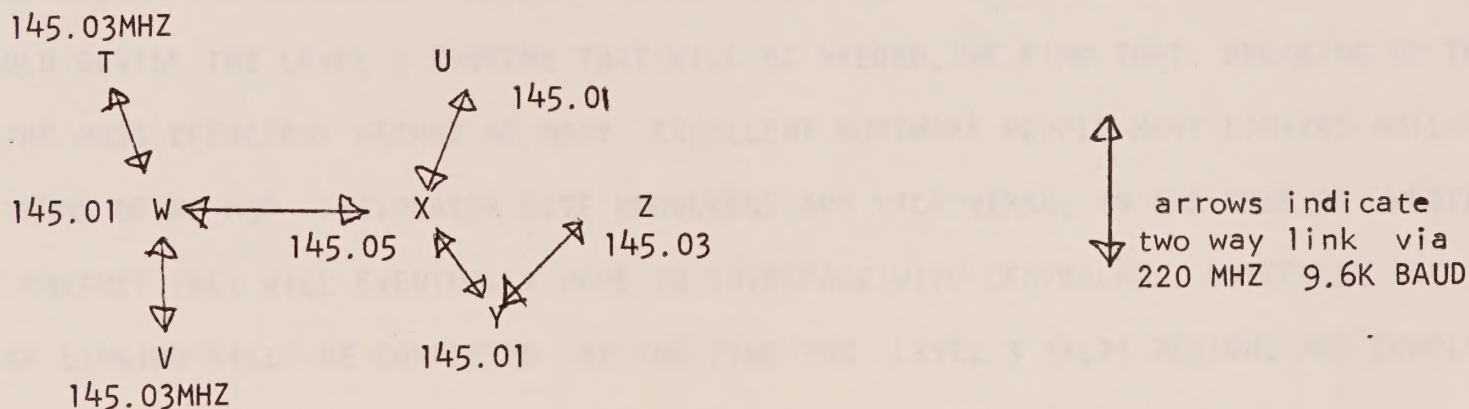


LEV. 2 PHASE A

DIGIPEATER X CAN BE BOGGED DOWN RELAYING TRAFFIC FROM "W" TO "Y" BECAUSE IT IS HEARING TOO MANY OTHER LANS AND DOES NOT TRANSMIT THUS CREATING REPEAYED RETRANSMISSIONS OR OTHERWISE CAUSING COLLISIONS. THROUGHPUT IS SEVERELY LIMITED. T, U, V, W, X, Y, AND Z ARE HIGH LEVEL DIGIPEATERS LINKED ON THE SAME 2METER FREQUENCY. a ARE MEDIUM LEVEL DIGIPEATERS.

FIG 2.

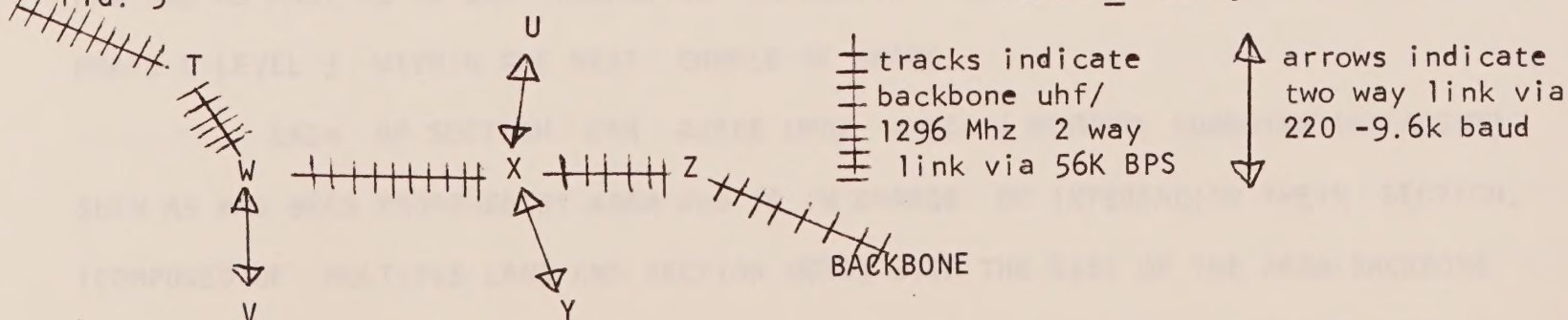
PHASE B LINKING-



PHASE B LINKING - 220 MHz 9.6K BAUD INTERTIES ALLOW THE HIGH LEVEL DIGIPEATERS TO TRANSFER INTERNET MESSAGES VIA 220 THUS ALLOWING THE LANS TO STAGGER FREQUENCIES WHICH GREATLY DIMINISHES NET LOADING AND COLLISIONS. DIGIPEATERS T, U, V, W, X, Y, Z, ARE SUPPORTED BY DUAL FREQUENCY /DUAL PORTED DIGIPEATERS SUPPORTING BOTH 2METER 1200 BAUD PACKETS AND 220 MHz 9.6 K BAUD PACKETS AT THE SAME SITE. LANS AT T, U, V, W, X, Y, Z STAGGER OPERATIONS ON 145.01, 03, 05, etc.

FIG. 3

PHASE C- LEV 3



PHASE C FUNCTIONS AS A TRIPLE PORTED DIGIPEATER OPERATING ON THREE FREQUENCIES AND BAUD RATES 2METER 1200 BAUD- 220MHz 9.6 K BAUD AND 56K BAUD ON 440MHz OR 1296 MHz. NODES T, W, X, AND Z ARE THREE TIERED DIGIPEATERS WHILE U, V, S AND Y REQUIRE NO ADDITIONAL MODIFICTIONS.

THE NETWORK COORDINATING AGENT (NCA)

IN THIS SCHEME THERE IS NO WASTED EFFORT AND IMPLEMENTATION CAN MUTUALLY COEXIST. IF NORTH AMERICA IS DIVIDED UP INTO THREE AREAS (WESTNET, CENTRALNET, AND EASTNET), THEN BACKBONE SYSTEMS CAN NOW BE PLANNED OUT AND THE DIFFICULT TASK OF SUITABLE DIGIPEATER SITE ACQUISITION CAN MOVE FORWARD AT THE SAME TIME THAT LEVEL TWO PHASE B IS BEING DEVELOPED. I HOPE THAT IT IS CLEAR THAT LEVEL TWO DEVELOPEMENT DOES NOT HAVE TO BE DETRIMENTAL TO LEVEL THREE DEVELOPEMENT AS SOMETIMES IS SUGGESTED. WITHIN EACH AREA THERE SHOULD BE ESTABLISHED AREA RF NETWORK COORDINATORS WHO CAN COORDINATE THE EFFICIENT PATHWAYS, SITES, FREQUENCIES, AND OTHER INTERFACES WITHIN THEIR PURVIEW. THUS RESOURCES ARE MOST EFFECTIVELY UTILIZED. AT THE SAMETIME TECHNICAL COMMITTEES WHOSE EXPERTISE IS SOFTWARE SYSTEMS SHOULD DEVISE THE LEVEL 3 SYSTEMS THAT WILL BE NEEDED. WE FIND THAT BREAKING UP THE TASKS IS THE MOST EFFICIENT METHOD AS MANY EXCELLENT SOFTWARE PEOPLE HAVE LIMITED ABILITY IN TERMS OF RF AND DIGIPEATER SITE KNOWLEDGE AND VICE VERSA. IN THE CASE OF WESTNET AND EASTNET THEY WILL EVENTUALLY HAVE TO INTERFACE WITH CENTRALNET. HOPEFULLY THE TASK OF RF LINKING WILL BE COMPLETED BY THE TIME THE LEVEL 3 AX.25 DESIGNS ARE COMPLETED AND SUITABLE 56K BAUD AFFORDABLE MODEMS ARE DEVELOPED.

WESTNET, EASTNET, AND CENTRALNET MAY BEST BE DEFINED BY THE CURRENT ARRL DEFINITIONS OF EASTERN AREA NET, CENTRAL AREA NET, AND WESTERN AREA NET AS THESE ARE BASICLY RF DESIGNS (ALBEIT BASED ON HF RATHER THAN UHF PRINCIPLES). IN THE MEANWHILE WE MUST USE WHATEVER METHODS THAT ARE AVAILABLE TO LINK AS FAR AND AS FAST AS WE CAN INCLUDING SATELLITE AND HF GATEWAYS AS WE APPROACH PHASE C LEVEL 3 WITHIN THE NEXT COUPLE OF YEARS.

EACH RF SECTION CAN AGREE UPON A NCA (NETWORK COORDINATING AGENT) SUCH AS HAS BEEN PROPOSED BY KA6M WHO IS IN CHARGE OF INTERFACING THEIR SECTION. (COMPOSED OF MULTIPLE LANS AND SECTION NETS) WITH THE REST OF THE AREA BACKBONE SYSTEM. THE NCA CAN BE SPONSORED BY A CONFEDERATION OF EXISTING LOCAL PACKET

Digitized by the Internet Archive
in 2025 with funding from
University of Maryland, Baltimore, Health Sciences and Human Services Library

ASSOCIATIONS WHOSE SOLE PURPOSE IS TO ESTABLISH THIS COORDINATING FUNCTION (SUCH AS WHAT HAS HAPPENED RECENTLY ON THE EASTCOAST AND SOUTHERN CALIFORNIA) OR THE NCA MAY BE AN EXISTING REGIONAL WIDE MULTIPURPOSE PACKET RADIO ASSOCIATION WHOSE ANCILARY PURPOSE IS TO SPONSOR COORDINATION OF FREQUENCIES, PROTOCOLS, DIGIPEATER SITES, BAUD RATES, SHIFT, ETC.) THE NCA COUNCIL MEMBERS SHOULD BE NUTS AND BOLTS PEOPLE WITH GOOD RF BACKGROUNDS AND REPEATER SITE EXPERIENCE. SOFTWARE AND HARDWARE DEVELOPEMENT SHOULD BE LEFT TO TECHNICAL COMMITTEES AND OTHER EXPERTS AND THE NCA COUNCILS SHOULD NOT BE ENCUMBERED WITH SUCH SPECIALIZED DETAILS. AS A FUNCTIONING BODY THE CA COUNCILS MAY BEST UTILIZE THE EXISTING DIGIPEATER SITES AND EQUIPMENT THROUGH COORDINATION WITHIN THEIR OWN SECTION (GATHERING RESOURCES) AND WITH THEIR NEIGHBORING SECTION ON A REGULAR BASIS. ROUTING INFORMATION SHOULD ALSO BE OBTAINED BY THESE NCA COUNCILS. THE NCA COUNCIL SHOULD BE INFORMED BY LOCAL PACKET RADIO ASSOCIATION TECHNICAL COMMITTEES ABOUT THEIR NEEDS AND DEVELOPEMENT IN REGARDS TO SITES, MODEMS, RADIOS, HARDWARE, SOFTWARE, ETC. ALSO NCA COUNCILS SHOULD REGULARLY REPORT BACK TO LOCAL PACKET RADIO ASSOCIATIONS ON THEIR PROJECTS SO THAT THE PACKET COMMUNITY FUNCTIONS AS A SMOOTHLY RUNNING UNIFIED AND ACTIVE ENTITY.

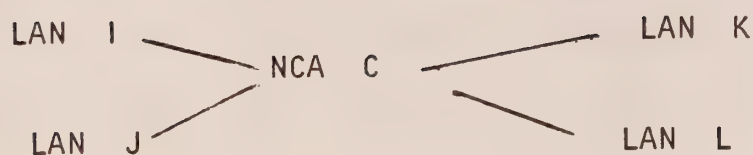
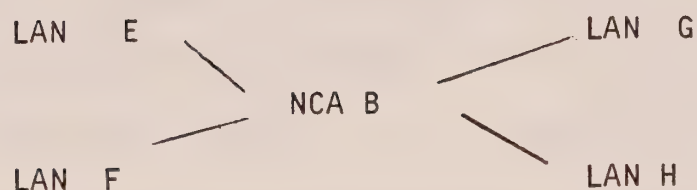
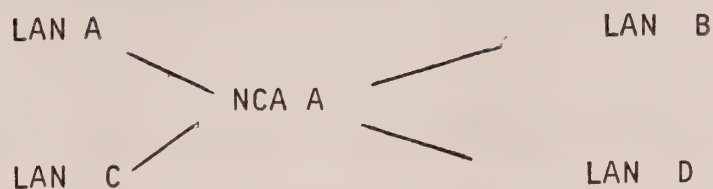
THIS DISCUSSION SHOULD NOT BE CONSIDERED ULTIMATE NOR FINAL. TECHNOLOGICAL ADVANCES MAY SURPRISE US WITH "MIRACLES" NOT YET DREAMED OF. CMOS MICROPROCESSORS AND DUAL MICROPROCESSOR CHIPS SHOULD PROVE VALUABLE FOR SOLAR POWER-ER HIGH LEVEL DOUBLE AND TRIPLE PORTED TNC DEVELOPEMENT. LARGER MICROPROCESSORS THAT MAY BE NECESSARY FOR SOME LEVEL THREE APPLICATIONS CAN BE LINKED TO THE HIGH SPEED PHASE C SITES THRU FULL DUPLEX POINT-TO-POINT MICROWAVE LINKS THUS ELIMINATING THE NEED OF ESTABLISHING COMPUTERS AT THE DIGIPEATER SITE (MOUNTAINTOP) ITSELF? PERHAPS ONE MILLION DOLLARS OR MORE CAN BE FOUND TO PUT UP A GEOSYNCHRONOUS AMATEUR RADIO SATELLITE THUS DECREASING THE DEMAND FOR PHASE C WIDESPREAD DEVELOPEMENT? ANYBODY FOR 160M HIGH POWER LINKING? WHAT ABOUT PETITIONING THE FCC FOR 1200 BAUD PACKET ON THE LOW BAND? I AM CONFIDENT THAT THE FUTURE WILL CONTAIN MANY INTERESTING DEVELOPEMENTS AND SURPRISES, BUT THEY WILL BE THE RESULT OF EFFORTS MADE IN THE PRESENT.

FIG 4 TRUNKLINE BACKBONE SYSTEM (REDUNDENT



SHOWING EASTNET, CENTRALNET, AND WESTNET DEFINED BY PRESENT NATIONAL T' FF! SYSTEM AREAS. WESTNET IS REDUNDENTLY LINKED VIA A BACKBONE SYSTEM. ANCILARY SECTIONS CAN JOIN THE BACKBONE VIA 220 MHZ 9.6K BAUD LINKS INTO THE TRUNK LINE. CROSSOVER TO CENTRAL AREA CAN BE ACHIEVED VIA COLORADO OR OTHER POINTS.

IT SEEMS THIS IS WHAT WE MUST DO NOW . EACH LOCAL PACKET RADIO ASSOCIATION SHOULD AGREE UPON A . . . NETWORKING COORDINATION AGENT THAT IS MOST SUITABLE ACCORDING TO THE SOCIAL AND RF BOUNDARIES OF THEIR REGIONS. THESE NCA COUNCILS SHALL BE RESPONSIBLE FOR COORDINATING WITH THEIR RESPECTIVE AREA NETWORKS (EASTNET, WESTNET, OR CENTRALNET) THUS DEFINING PATHWAYS, SYSTEMS, HARDWARE, FREQUENCIES AND OTHER NECESSARY COMPATIBILITIES NECESSARY FOR LINKING IMPLEMENTATION. THEY WILL BE AIDED BY THE LOCAL TECHNICAL COMMITTEES, AND IN TURN AID THE LOCAL TECHNICAL COMMITTEES WITH ROUTING INFORMATION. EACH LOCAL PACKET ASSOCIATION SHOULD HAVE THEIR OWN FREQUENCY COORDINATING COMMITTEE TO COORDINATE FREQUENCY AND DIGIPEATER SITES WITHIN THE LAN AS WELL AS TO COORDINATE WITH THE NCA . IN THE SAN FRANCISCO BAY AREA THE PACIFIC PACKET RADIO ASSOCIATION HAS AGREED TO ACT AS THIS SECTION'S NCA. HERETOFORE WE HAVE DISCUSSED PROBLEMS OF LEVEL TWO MULTIHOPPING AND THE ESTABLISHMENT OF GREATER REGIONAL PHASE A DIGIPEATER COVERAGE. MORE WORK NEEDS TO BE ACCOMPLISHED IN THIS AREA AS REGARDS EFFICIENT USE OF EXISTING OVERCROWDED FREQUENCIES, RECOMMENDED OPERATING PROCEDURES ON THE LINKING FREQUENCY, AND THE MOST EFFICIENT METHOD OF ESTABLISHING DIGIPEATER SITE COORDINATION. WE HAVE JUST BEGUN SERIOUS DISCUSSION OF PHASE B IMPLEMENTATION AND THIS SHALL BE A MAJOR FOCUS OF FUTURE DISCUSSIONS. NCA COUNCIL MEMBERS ARE VOLUNTEERS RECRUITED FROM LOCAL ASSOCIATIONS. THEY SHOULD BE EXPERIENCED IN THE FIELDS OF FREQUENCY COORDINATION, REPEATER SITE OPERATION AND ACQUISITION, RF HARDWARE AND . LEVEL 3 SYSTEMS DESIGN. NCA COUNCILS SHOULD APPOINT COORDINATORS TO AREA NETWORKING MEETINGS. THUS WESTNET AREA COORDINATION SHOULD BEST BE PERFORMED VIA REPRESENTATIVES OF THE VARIOUS NCAS WITHIN WESTNET. AREA NETWORK COUNCILS SHOULD IN TURN ESTABLISH COORDINATION WITH OTHER NETWORKS THROUGH APPOINTED DESIGNATED COORDINATORS. HOPING THAT WE CAN THROUGH THINKING THIS THROUGH, AND GETTING ORGANIZED WE CAN MORE EFFECTIVELY ACCOMPLISH OUR MUTUAL GOALS. REGARDLESS IF NATIONAL LINKING IS EFFECTED VIA ONE SOFTWARE DESIGN APPROACH OR ANOTHER, WE WILL STILL NEED TO DEVELOPE AN EFFECTIVE AND EFFICIENT RF VHF/UHF RF LINKING SYSTEM ASAP IN EITHER CASE.



ETC.

FIG. 5

NCA A, NCA B, NCA C, ETC SHALL MAKE UP THE COUNCIL REPRESENTATIVES TO THE WESTNET AREA COORDINATION CONFERENCES. EACH NCA SHALL BE COORDINATED WITH THEIR NEIGHBORS. EACH NCA SHOULD ELECT A HEAD COORDINATOR TO HANDLE CORRESPONDENCE WITH THE OTHER NCAs IN THE AREA NET (IN THIS CASE WESTNET). MEMBERSHIP IN THE SECTION NCAs SHOULD BE OPEN TO ALL WHO ARE INTERESTED BUT CERTAINLY EMPHASIS SHOULD BE HIGHLY PLACED ON THOSE WITH THE EXPERTISE OF REPEATER HIGH LEVEL SITE ACQUISITION, MAINTENANCE, AND FACILITY. CLOSE LIAISON SHOULD BE HAD WITHIN THE NCA WITH ALL TECHNICAL COMMITTEES OF LOCAL PACKET ASSOCIATIONS SO THAT SYSTEM SOFTWARE DESIGNERS AND HARDWARE DEVELOPERS ARE BOTH INFORMED AND HAVE INPUT UPON THE OVERALL AREANET PLANNING. AT AREA NET MEETINGS IF SOFTWARE DETAILS ARE DISCUSSED, THERE WILL BE LITTLE TIME FOR EFFECTIVE RF LINKING DISCUSSION. THE QUESTION REMAINS, "HOW ARE WE TO REALIZE EFFECTIVE AND EFFICIENT DIGIPEATER HIGH LEVEL SITE COORDINATION WHICH REQUIRES A DIFFERENT EXPERTISE THROUGH THE NCA VEHICLE?" SHOULD THERE BE ESTABLISHED TWO VEHICLES? EACH WORKING SPECIFICALLY UPON THEIR FOCUSED GOALS?

IN ANY EVENT EACH AREA NET (EAST, CENTRAL, & WEST) SHOULD BE RESPONSIBLE TO EFFECTING EFFICIENT RF LINKING WITHIN THEIR AREAS AND CREATING AN INTERFACE TO OTHER AREAS.

EACH AREA NET BEING COMPOSED OF REPRESENTATIVES OF ALL THEIR INTERNAL LANS OR THEIR NETWORK COORDINATING AGENT REPRESENTATIVES SHALL APPOINT ONE COORDINATOR WHOSE RESPONSABILITY WOULD BE TO HANDLE CORESPONDENCE FROM THEIR COMPONENT NCAs AND THE OTHER AREA NETS, TO ESTABLISH PLACES AND DATES FOR MEETINGS, TO KEEP ALL INTERNAL NCAs INFORMED OF INTERNAL HAPPENINGS, TO ACT AS A CENTRAL CLEARING HOUSE OF RELEVANT INFORMATION RELEVANT TO THE NCAs WITHIN THE AREA, AND TO ESTABLISH AN AGENDA AT THE AREA NET MEETINGS, TO HELP FACILITATE THE DEVELOPEMENT OF LINKING WITHIN THE AREA SO THAT AN EFFECTIVE DATA COMMUNICATIONS ERROR FREE RELIABLE PACKET RADIO SYSTEM IS IN EFFECT TO THE HIGHEST POSSIBLE STANDARDS THAT AFFORDABLE TECHNOLOGY WILL ALLOW FOR BOTH AMATEUR COMMUNICATION AND FOR PUBLIC SERVICE AND EMERGENCY COMMUNICATIONS THROUGH THE SYSTEMS ABILITY TO ALSO HANDLE THIRD PARTY TRAFFIC.

7

FOOTNOTES:

1. HOWARD GOLDSTEIN, N1WX HAS DEVELOPED AN ADDON KIT CALLED THE FAD-PAD WHICH IS A PIGGYBACK BOARD THAT ATTACHES TO THE XEROX 820 BOARD, ALLOWING AN 8530 HDLC CHIP TO CREATE TWO RS-232-C OR TTL HDLC PORTS THUS ALLOWING THE XEROX 820 BOARD TO FUNCTION EFFICIENTLY AS A DUAL PORT DIGIPEATER. KITS ARE AVAILABLE FROM TAPR FOR \$25 THAT CONTAIN PC BOARD, PARTS LIST, SCHEMATIC AND BRIEF SURVIVAL GUIDE.
2. STEVE GOODE, K9NG HAS DESIGNED 9.6 KBIT/S CIRCUIT BOARD THAT ATTACHES DIRECTLY TO THE IF OF EXISTING RADIOS ALLOWING 9.6 K BPS PACKETS TO BE TRANSMITTED AND RECEIVED IN A VERY AFFORDABLE MANNER.
3. JON BLOOM, KE3Z HAS WRITTEN A PROGRAM THAT CONVERTS THE XEROX 820 BOARD INTO A DIGIPEATER WITH TWO INDEPENDENT PACKET I/O PORTS AND ENOUGH INTERNAL LOGIC TO ROUTE PACKETS FROM ONE PORT TO ANOTHER USING THE SERIAL I/O PORT (SIO) TO SEND AND RECEIVE PACKETS. THE PROGRAM RESIDES IN ROM

